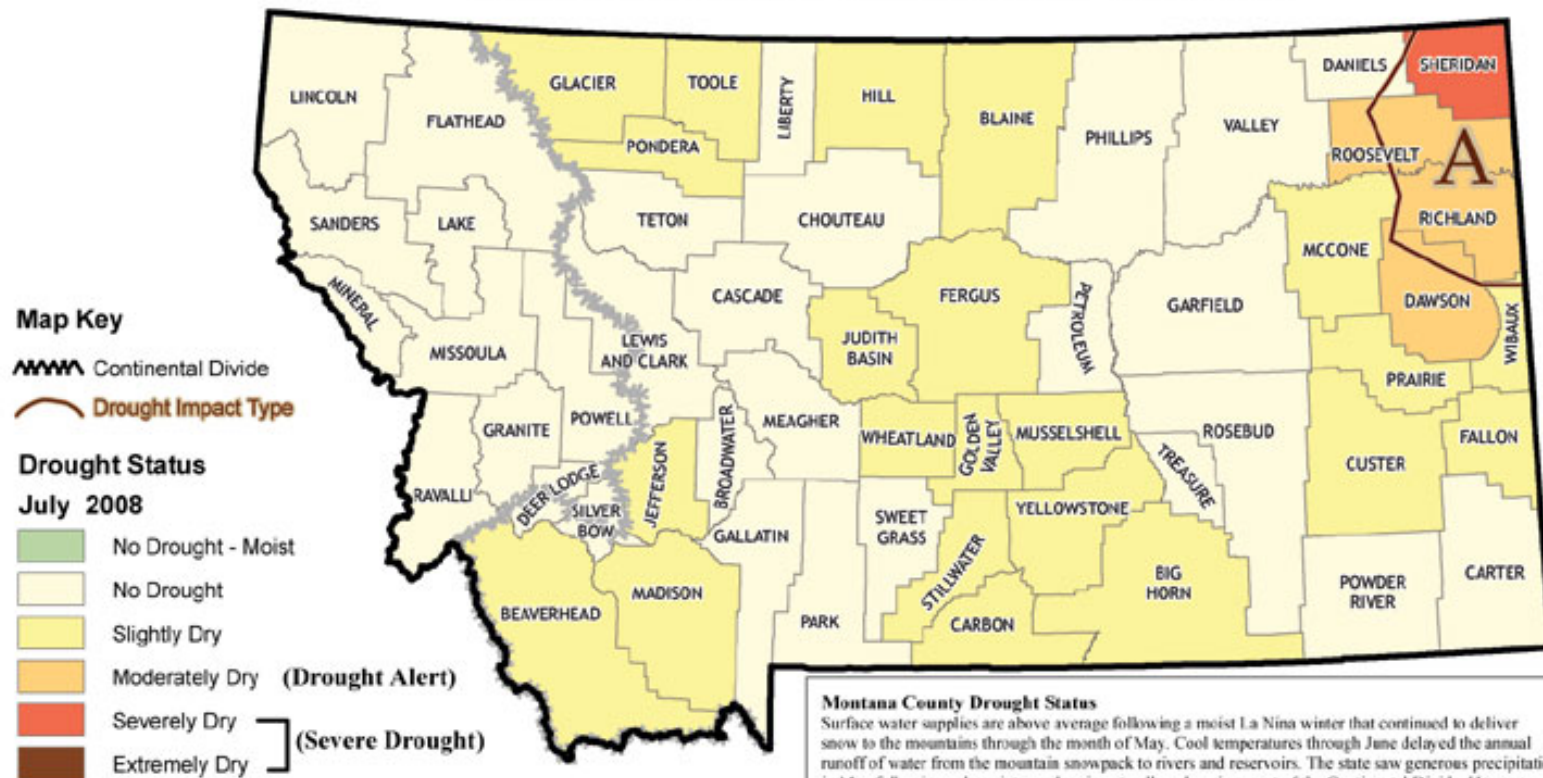


Montana Drought Status by County - July, 2008



Drought Impact Types - A = Agricultural - Soil Moisture, Range conditions

H = Hydrological - Water Supplies, Streamflow, Groundwater

Drought Alert - Governor's Drought

Advisory Committee strongly encourages local officials to convene local drought committees.

Severe Drought - Local officials

should have local drought planning efforts underway or should reconvene the local drought committee at the earliest opportunity.

For recommended responses, see the Montana Drought Plan.



<http://nris.mt.gov/drought/>



<http://drought.mt.gov/>

Montana County Drought Status

Surface water supplies are above average following a moist La Nina winter that continued to deliver snow to the mountains through the month of May. Cool temperatures through June delayed the annual runoff of water from the mountain snowpack to rivers and reservoirs. The state saw generous precipitation in May following a dry winter and spring at valley elevations east of the Continental Divide. However, soil moisture and livestock water remain in short supply in several Northeast counties where crop development was further hindered by unseasonably cool temperatures. The La Nina has weakened bringing ENSO into a neutral state for the time being.

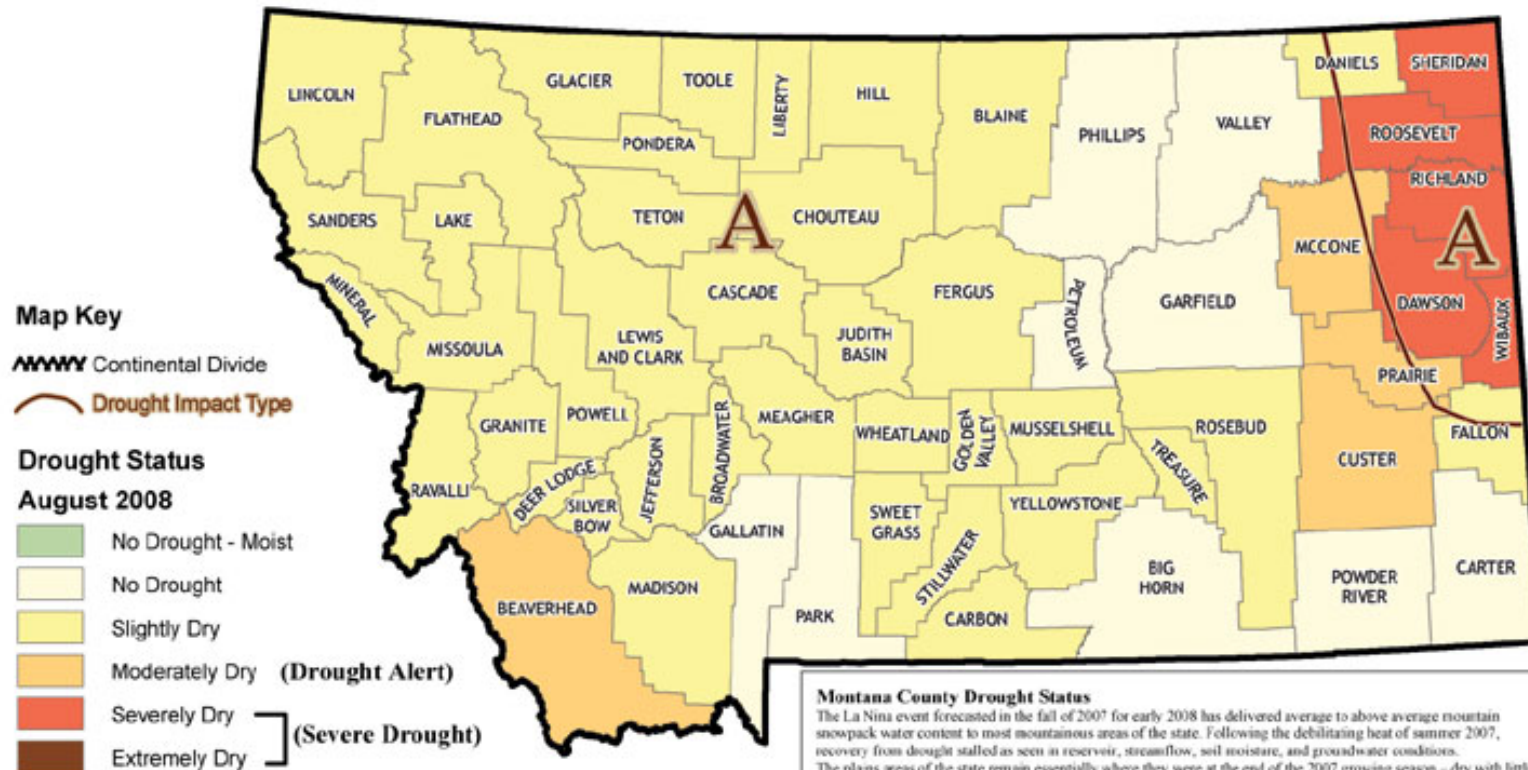
The Governor's Drought Advisory Committee assesses water supply and moisture conditions on a monthly basis to determine drought status for each county of the state. The drought status map is used primarily to promote awareness of drought and to alert Montanans to impending drought conditions so they may respond appropriately.

Drought Alert: Governor's Drought Advisory Committee strongly encourages watershed groups and county drought committees to convene and undertake planning for drought.

Severe Drought: Local officials should have local drought planning underway or should convene local drought planning at the earliest opportunity.

For information about how the drought status maps are determined or to learn more about recommended responses to drought see the Montana Drought Response Plan. (<http://nris.state.mt.us/drought/committee/DroughtP07.pdf>)

Montana Drought Status by County - August, 2008



Drought Impact Types - A = Agricultural - Soil Moisture, Range conditions

H = Hydrological - Water Supplies, Streamflow, Groundwater

Drought Alert - Governor's Drought Advisory Committee strongly encourages local officials to convene local drought committees.

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For recommended responses, see the Montana Drought Plan.



<http://nris.mt.gov/drought/>



<http://drought.mt.gov/>

Montana County Drought Status

The La Nina event forecasted in the fall of 2007 for early 2008 has delivered average to above average mountain snowpack water content to most mountainous areas of the state. Following the debilitating heat of summer 2007, recovery from drought stalled as seen in reservoir, streamflow, soil moisture, and groundwater conditions. The plains areas of the state remain essentially where they were at the end of the 2007 growing season - dry with little snow cover. The period from December through March brings only about two to three inches in a normal year to plains and valley elevations and spring storms will be important to recovery in these areas. But the water supply outlook looks very favorable as of mid-February for surface water dependent valleys on both sides of the Continental Divide as the mountains reach the two-third mark of the snow water accumulation period for the water year. The concern at this time is whether the state will experience an early snowmelt of mountain snowpack, as in 2007, or a normal runoff period from mid-May through June.

The Governor's Drought Advisory Committee assesses water supply and moisture conditions on a monthly basis to determine drought status for each county of the state. The drought status map is used primarily to promote awareness of drought and to alert Montanans to impending drought conditions so they may respond appropriately.

Drought Alert: Governor's Drought Advisory Committee strongly encourages watershed groups and county drought committees to convene and undertake planning for drought.

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For information about how the drought status maps are determined or to learn more about recommended responses to drought see the Montana Drought Response Plan.

(<http://nris.state.mt.us/drought/committee/DroughtP07.pdf>)



Governor's Drought Advisory Committee Meeting

August 14, 2008

National Weather Service

Gina Loss

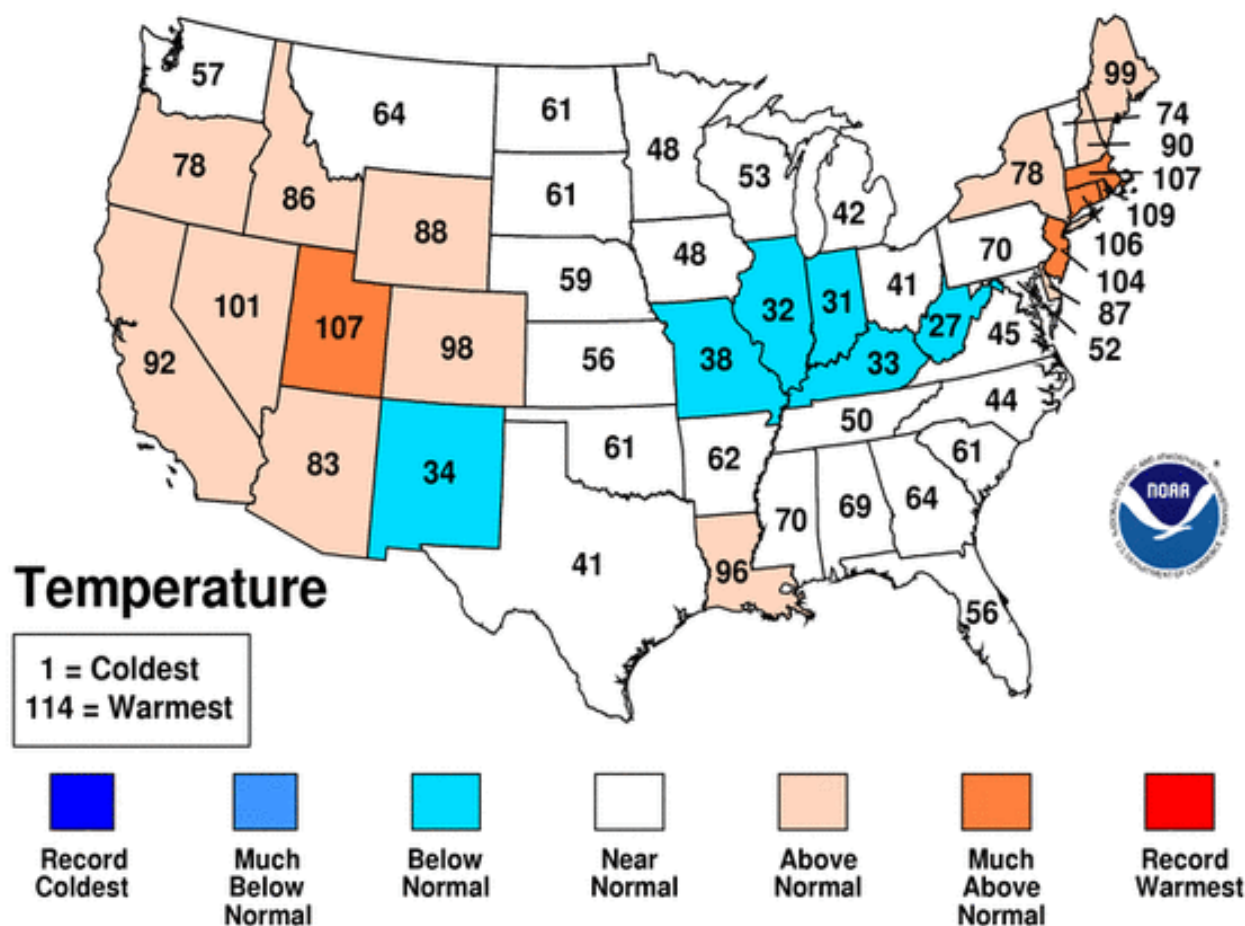
July 2008

Statewide Temperature Ranking

64th coldest
51st warmest

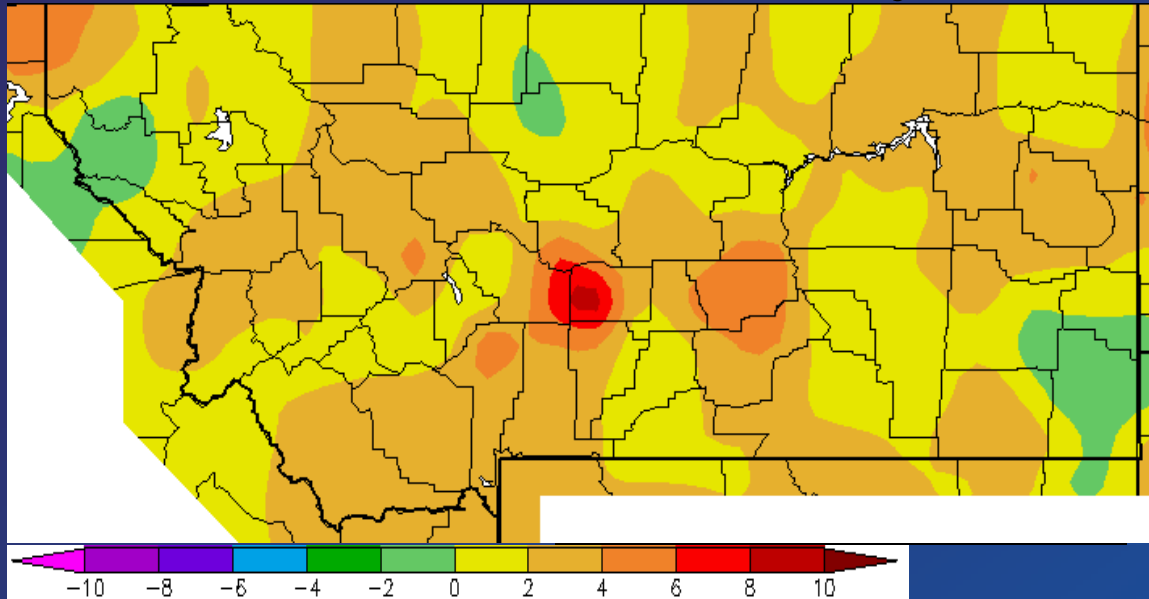
July 2008 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA

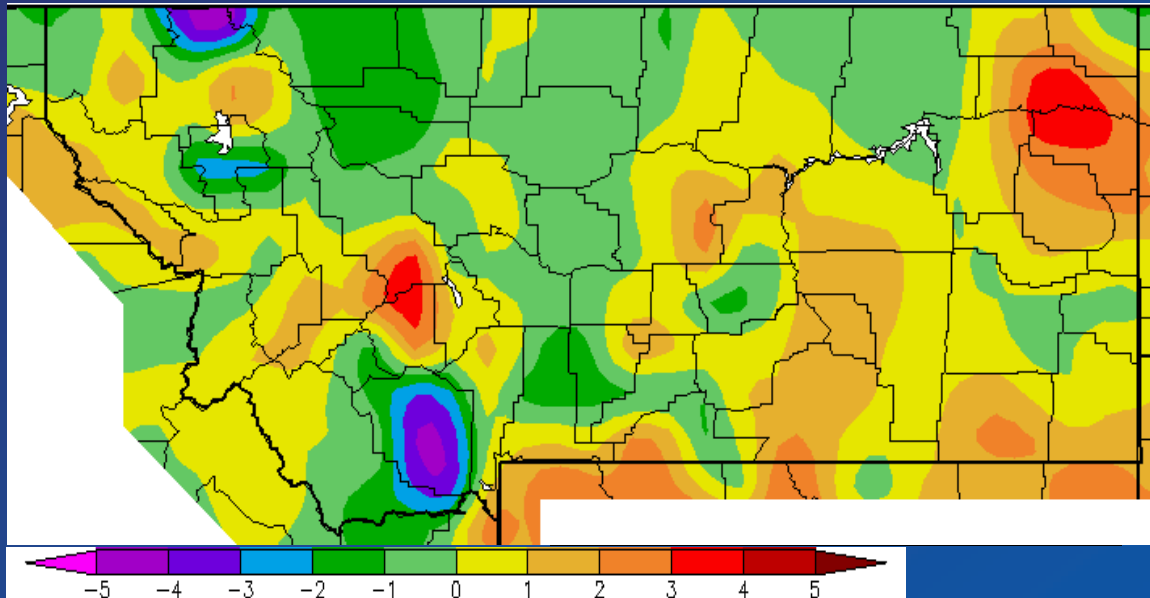


Temperature Anomalies

July 2008

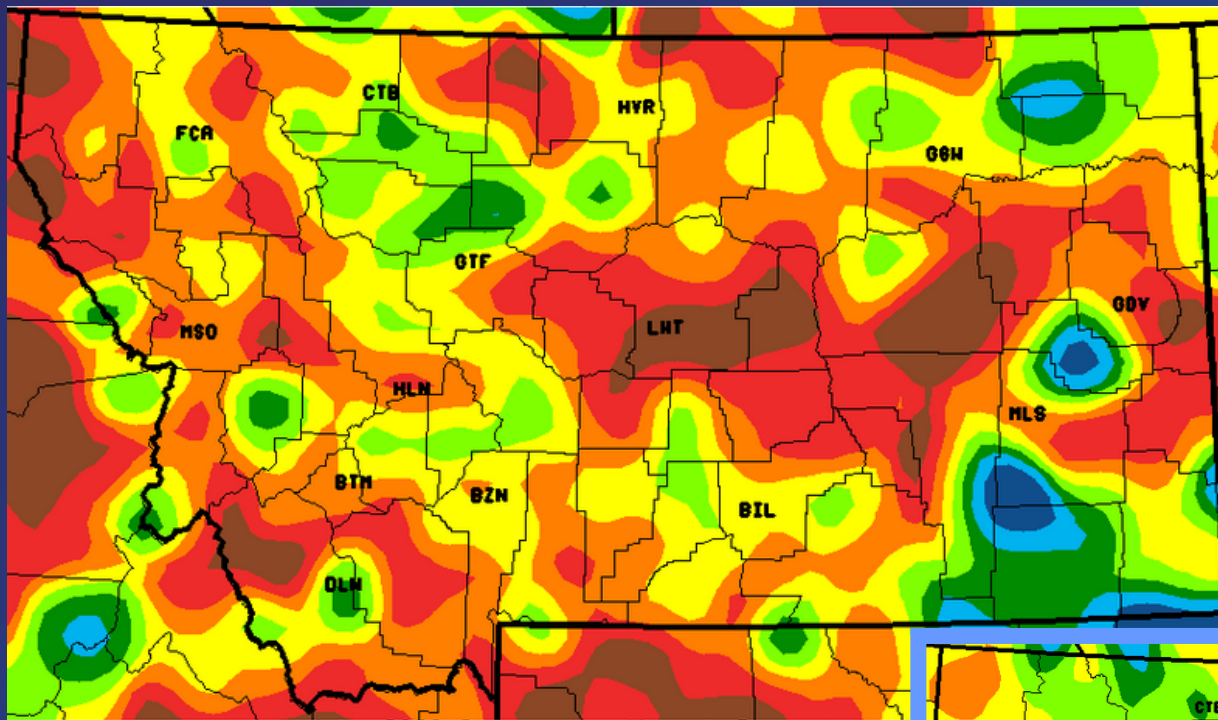


- Temperatures averaged near to slightly above normal
 - *Highs near to 4 degrees above normal*
 - *Lows generally near normal*
 - Isolated pockets above and below normal



Percent of Normal Precipitation

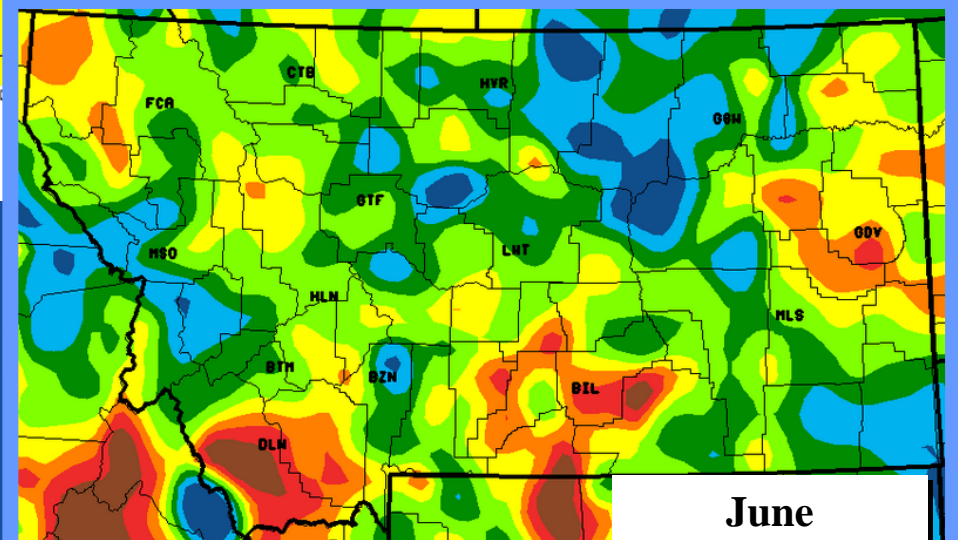
July 2008



July 2008 Percent of Normal Precipitation
Period of Normal: 1971-2000

20 40 60 85 115 150 200

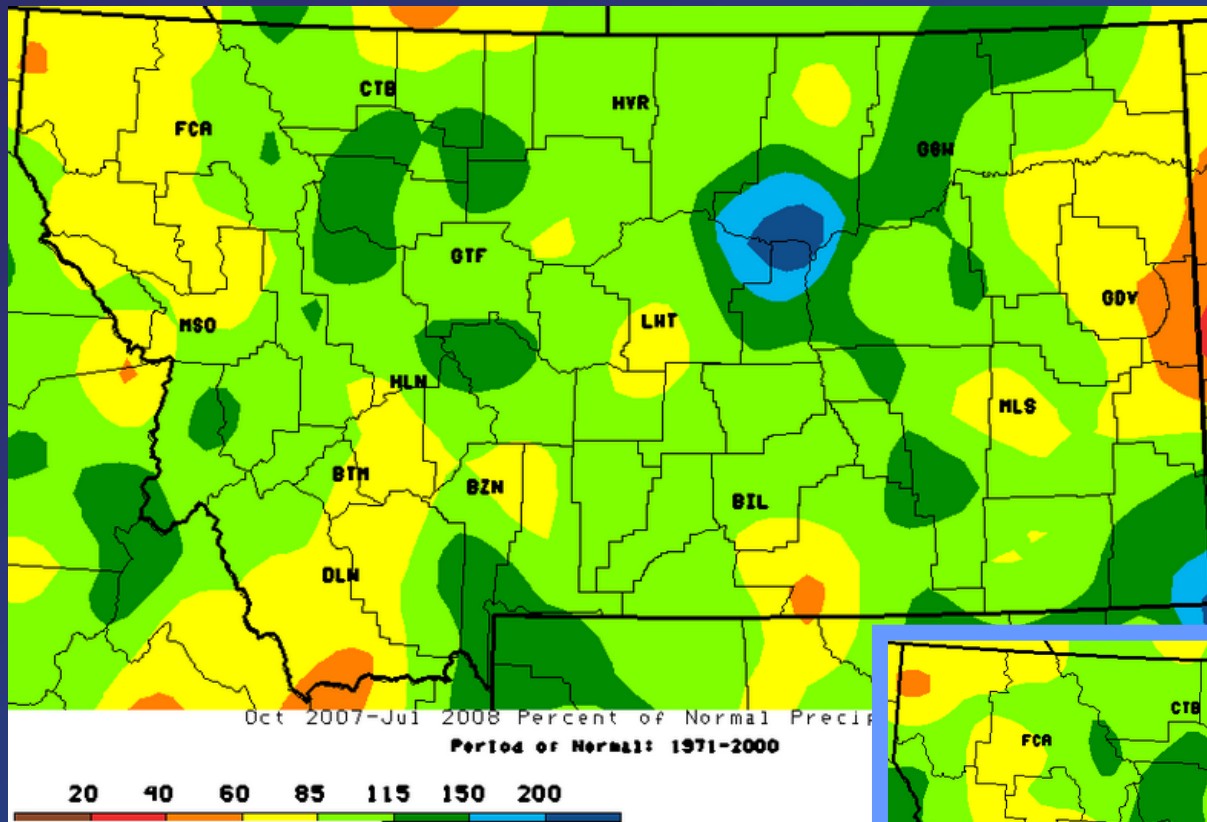
- Large portion of the state well below normal
 - Areas northwest, southwest, north central, central and east less than 20% of normal
 - 28th driest of 114 years
- Areas northeast and southeast above normal



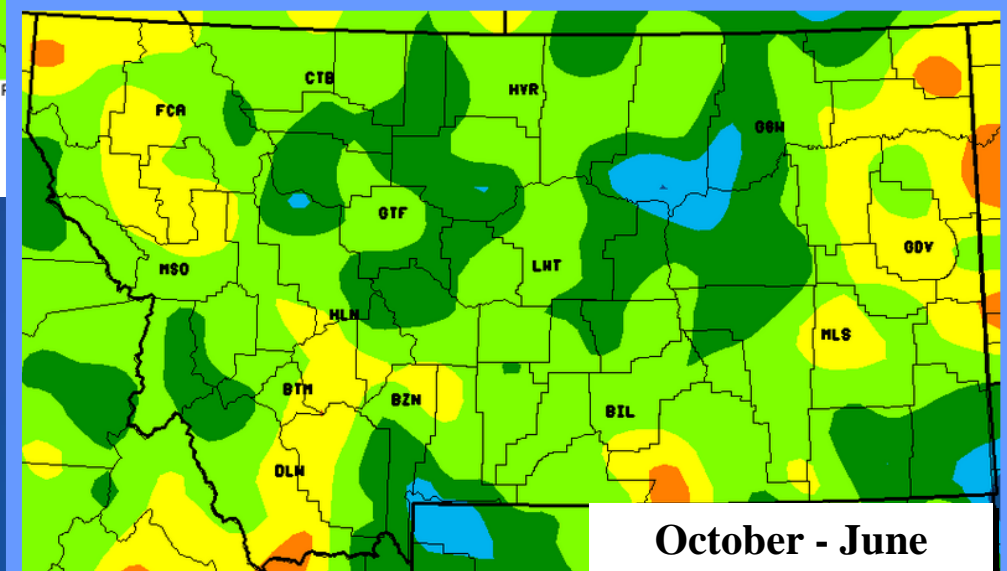
June

Percent of Normal Precipitation

Water Year 2008

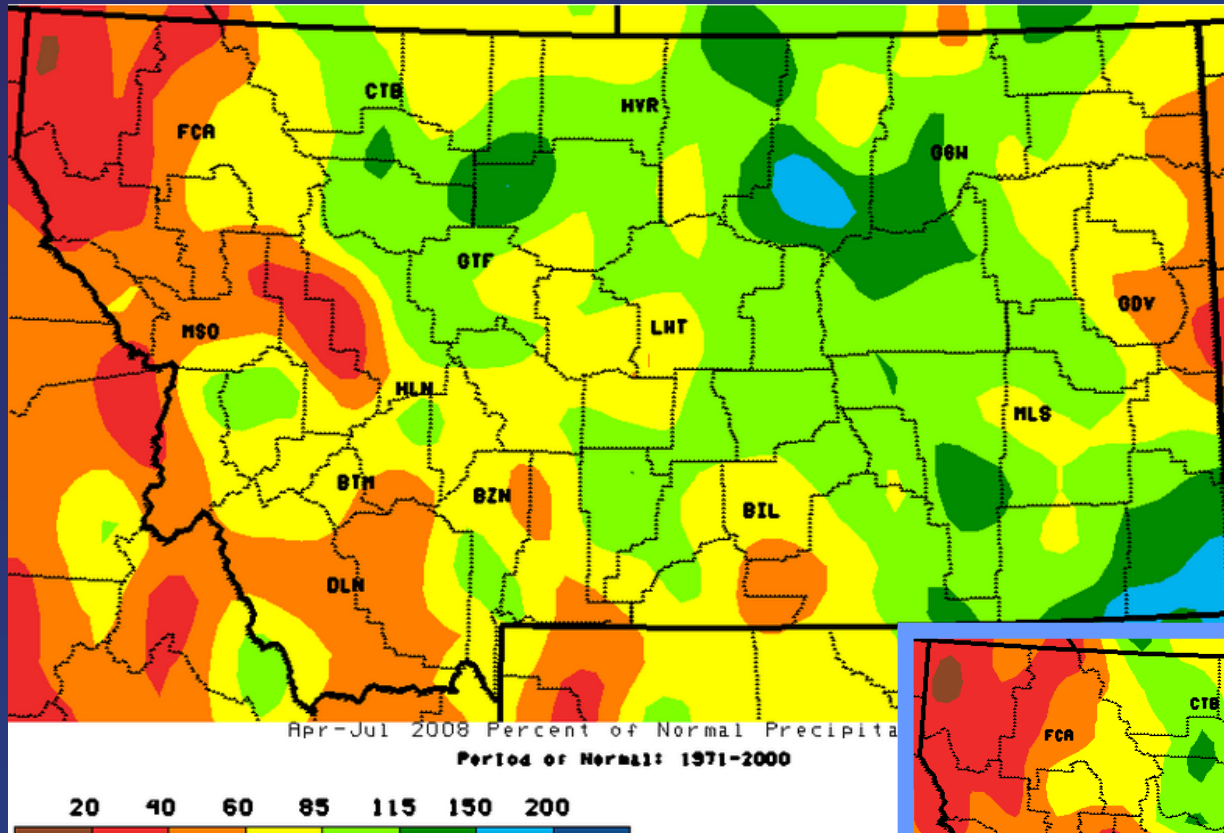


- October – July
- Most of state still averaging near normal
- Areas west, southwest, south central and east dropping below to well below normal
- Areas above normal decreasing

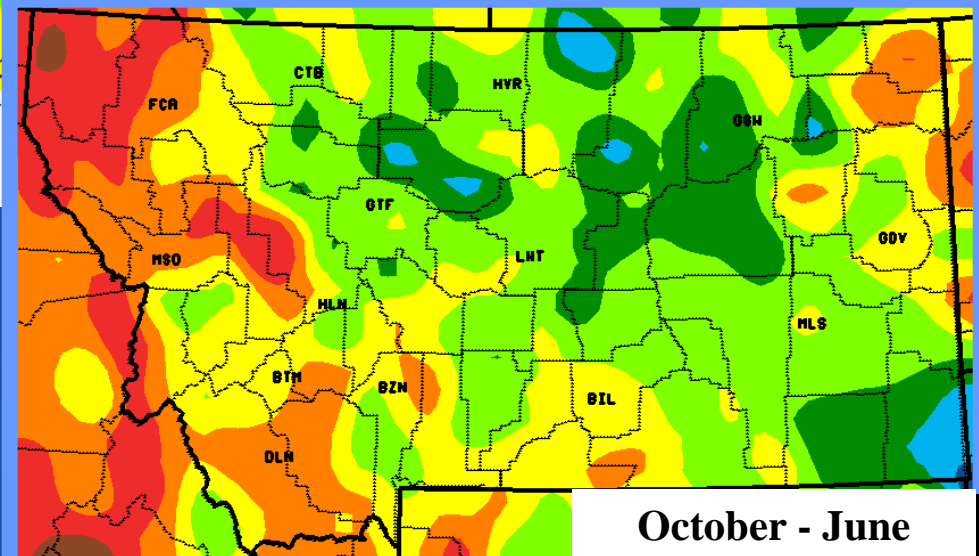


Percent of Normal Precipitation

Crop Year 2008

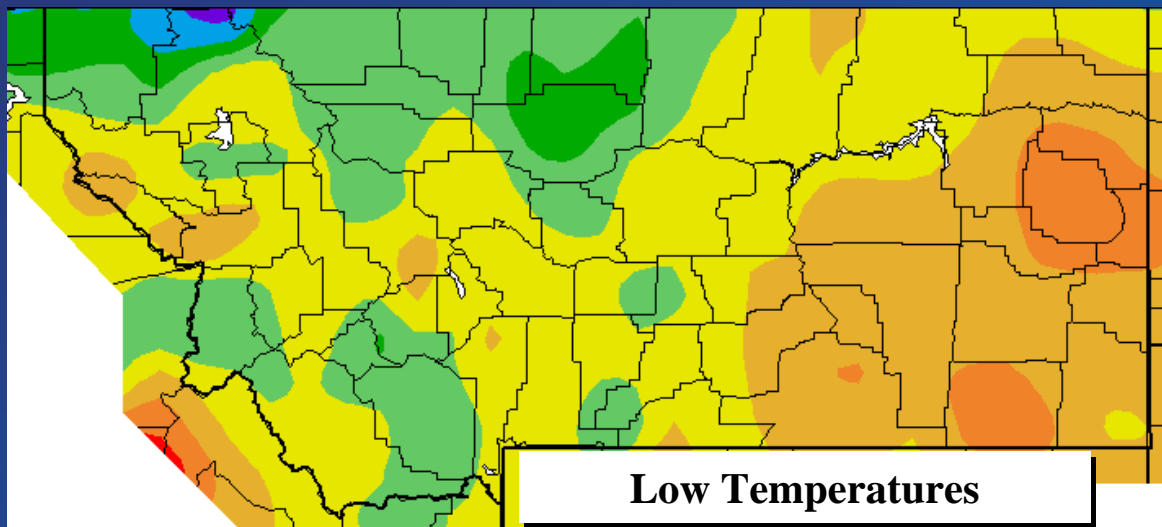
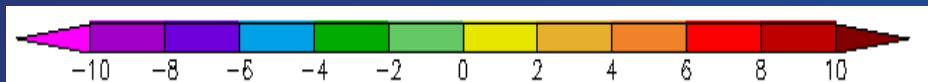
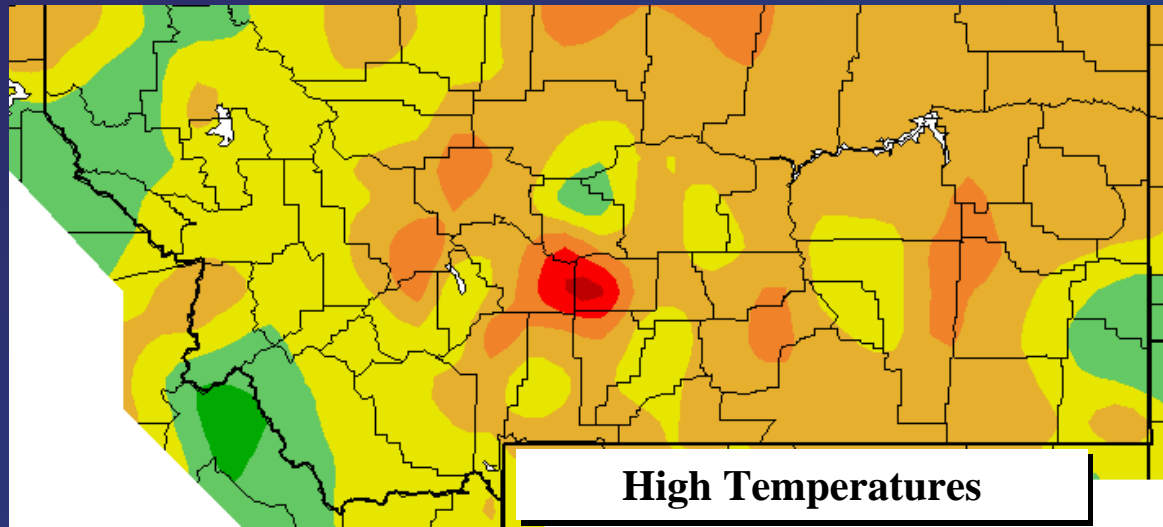


- April – July 2008
- Areas west, southwest and east well below normal
 - West of divide has large areas 20% to 40% of normal
- Large portion of areas east of divide near normal



Departure from Average Temperature

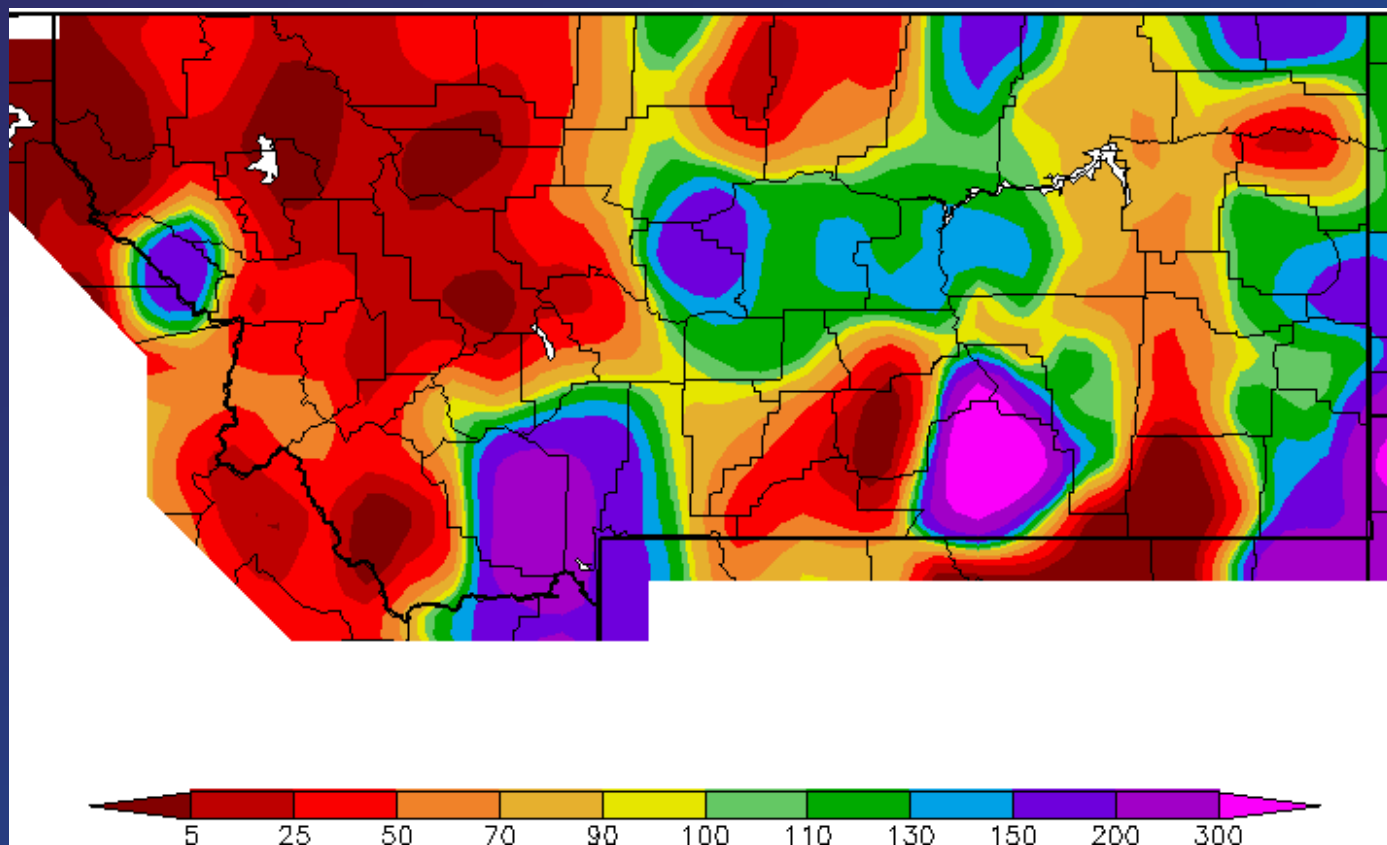
August 1 – 11, 2008



- Above normal overall
 - *Highs and lows near to 4 degrees above normal*

Percent of Average Precipitation

August 1 – 11, 2008



- Precipitation for August varied
 - *Convective storms*
- Most of western third of Montana less than 50% of normal
 - *Smaller areas north central, south and east*

Precipitation Totals

August and Water Year 2008

	AUGUST 1 - 12				WATER YEAR TO DATE			
	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML
WESTERN MONTANA								
BUTTE	0.45	0.54	-0.09	83	8.93	10.87	-1.94	82
KALISPELL	0.02	0.48	-0.46	4	11.06	15.24	-4.18	73
MISSOULA	0.02	0.34	-0.32	6	9.40	10.26	-0.86	92
MULLAN PASS	0.05	0.36	-0.31	14	34.10	42.95	-8.85	79
SOUTHWEST MONTANA								
BIG SKY	1.41	0.52	0.89	271	24.59	17.55	7.04	140
BOULDER	0.42	0.60	-0.18	70	8.55	9.62	-1.07	89
BELGRADE FIELD	0.54	0.37	0.17	146	13.27	12.51	0.76	106
BOZEMAN MSU	0.83	0.50	0.33	166	21.57	16.51	5.06	131
DILLON AIRPORT	0.12	0.36	-0.24	33	7.86	8.25	-0.39	95
ENNIS	0.41	0.48	-0.07	85	13.13	11.51	1.62	114
HELENA	0.03	0.48	-0.45	6	7.76	9.37	-1.61	83
ROGERS PASS 9 NNE	0.08	0.68	-0.60	12	13.87	15.02	-1.15	92
TOWNSEND	0.29	0.51	-0.22	57	7.66	8.86	-1.20	86
WISDOM	0.14	0.48	-0.34	29	10.30	10.27	0.03	100

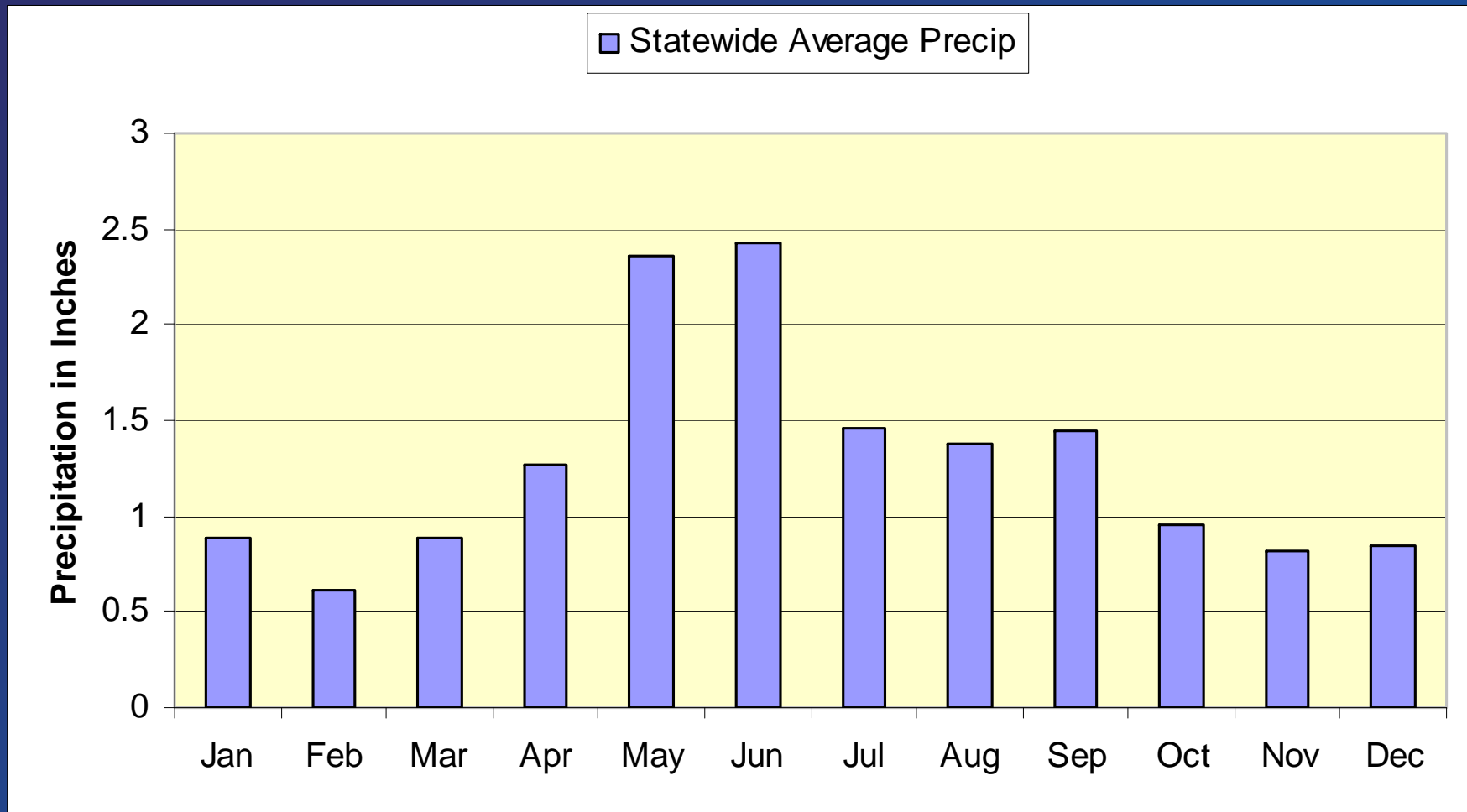
Precipitation Totals

August and Water Year 2008

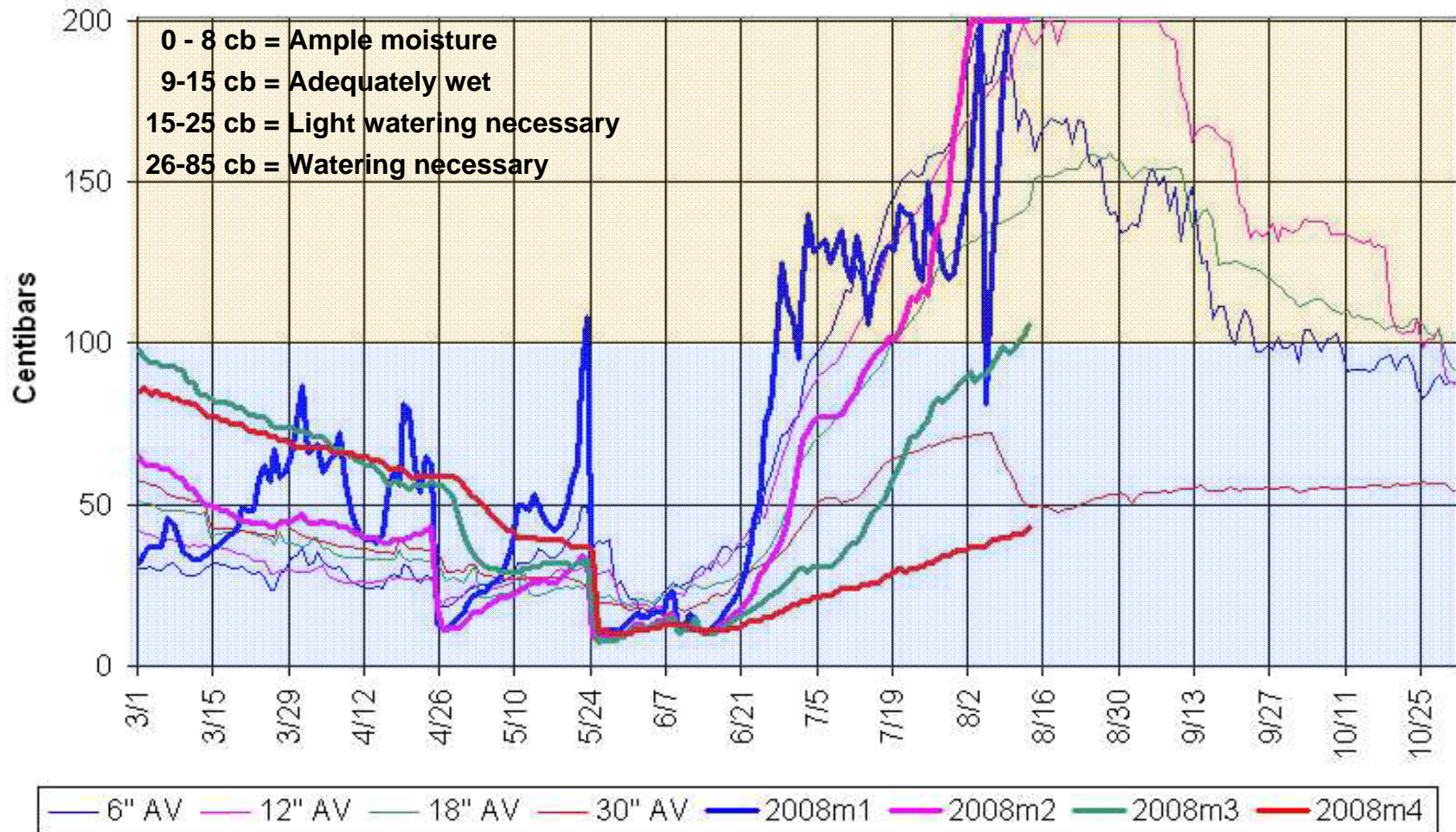
	AUGUST 1 - 12				WATER YEAR TO DATE			
	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML
CENTRAL MONTANA								
BILLINGS	0.07	0.32	-0.25	22	10.16	12.85	-2.69	79
CASCADE 20 SSE	0.31	0.49	-0.18	63	14.84	12.01	2.83	124
CHESTER	0.00	0.48	-0.48	0	8.51	9.03	-0.52	94
CHINOOK	0.08	0.49	-0.41	16	11.15	10.78	0.37	103
CHOTEAU	0.00	0.50	-0.50	0	12.55	8.74	3.81	144
CONRAD	0.00	0.53	-0.53	0	9.94	10.13	-0.19	98
CUT BANK	0.23	0.63	-0.40	37	10.96	10.25	0.71	107
FORT ASSINNIBOINE	0.03	0.57	-0.54	5	9.41	11.03	-1.62	85
FORT BENTON	0.52	0.57	-0.05	91	6.65	11.51	-4.86	58
TE 7 N	0.27	0.62	-0.35	44	11.47	11.09	0.38	103
GRASS RANGE	0.79	0.64	0.15	123	15.80	14.29	1.51	111
GREAT FALLS	0.22	0.60	-0.38	37	12.98	12.67	0.31	102
HARLEM	0.18	0.41	-0.23	44	8.06	9.57	-1.51	84
HAVRE	0.10	0.48	-0.38	21	8.65	9.71	-1.06	89
LIVINGSTON	0.45	0.48	-0.03	94	11.99	13.36	-1.37	90
LEWISTOWN	0.86	0.75	0.11	115	13.81	15.33	-1.52	90
MARTINSDALE 3 NNW	0.59	0.61	-0.02	97	11.34	11.43	-0.09	99
MILLEGAN	0.14	0.63	-0.49	22	17.84	15.62	2.22	114
NEIHART 8 NNW	0.66	0.81	-0.15	81	19.48	18.11	1.37	108
SHELBY	0.00	0.36	-0.36	0	8.15	7.92	0.23	103
STANFORD	1.20	0.72	0.48	167	14.59	14.53	0.06	100
VALIER	0.02	0.58	-0.56	3	10.02	10.09	-0.07	99
WHITE SULPHUR SPRGS	0.23	0.48	-0.25	48	10.83	11.27	-0.44	96
EASTERN MONTANA								
GLASGOW	0.35	0.50	-0.15	70	12.72	9.52	3.20	134
MILES CITY	0.22	0.48	-0.26	46	7.89	11.59	-3.70	68

Statewide Average Precipitation

August precipitation slightly less than July's... and about half of June's



Great Falls Soil Moisture



- 💧 All levels drying
- 💧 6 and 12 inch readings riding around 200cb
- 💧 18" and 30" levels running more moist than 'average' for 2003-2007

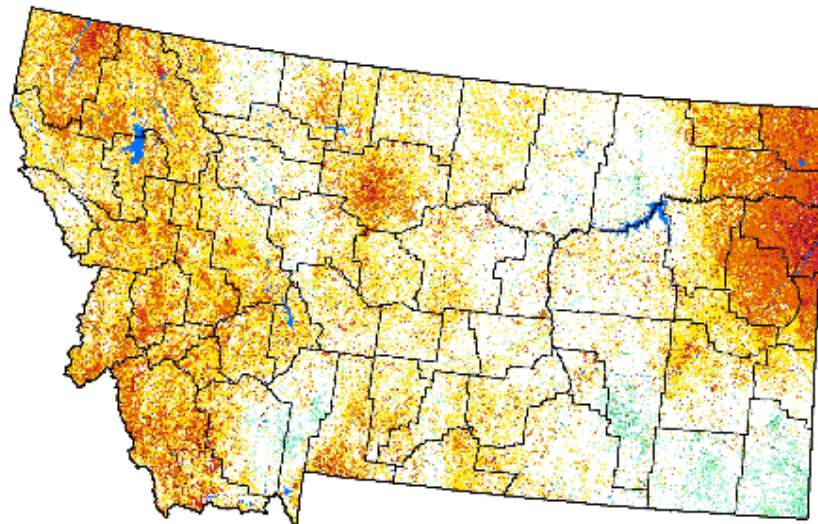
VegDRI Index

Vegetation Drought Response Index

Vegetation Drought Response Index
Complete: Montana

July 28, 2008

Vegetation Condition



- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water



Vegetation starting to show signs of stress in drier areas

- **Northeast**
- **Northwest**
- **Southwest**

VegDRI integrates satellite-based observations of

- **Vegetation conditions**
- **Climate data**
- **Land cover/land use type**
- **Soil characteristics**
- **Ecological setting**

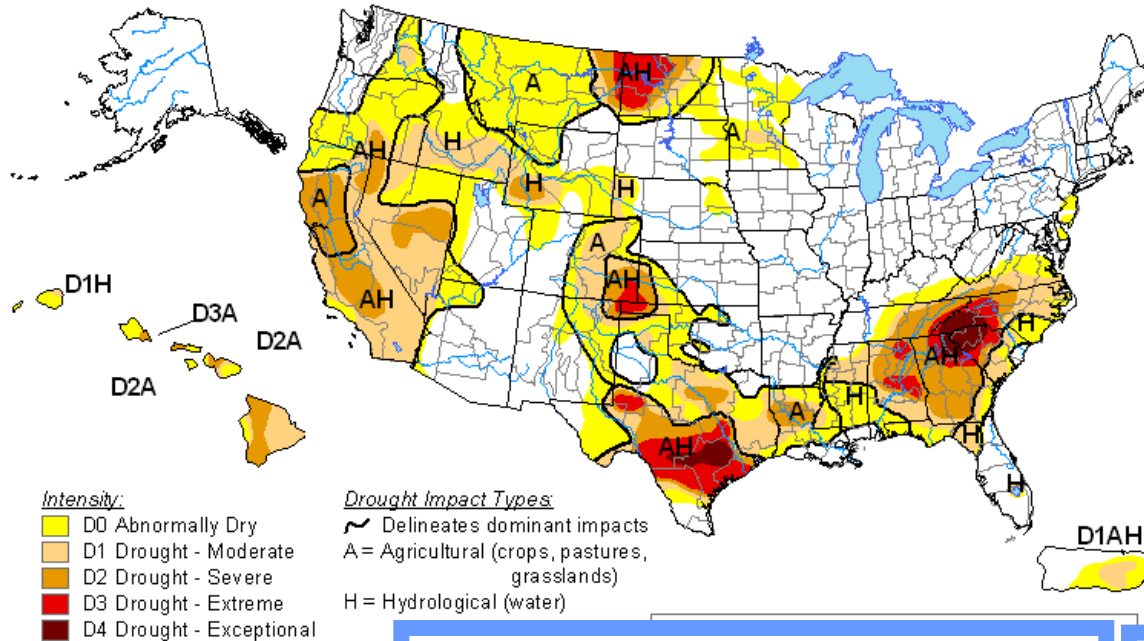
Spatial detail 1-2 km resolution

National Drought Monitor

Released August 14, 2008

U.S. Drought Monitor

August 12, 2008
Valid 7 am. EST

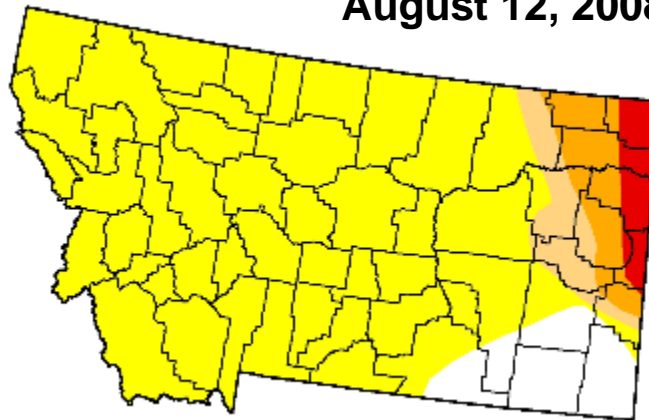


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for forecast statements.

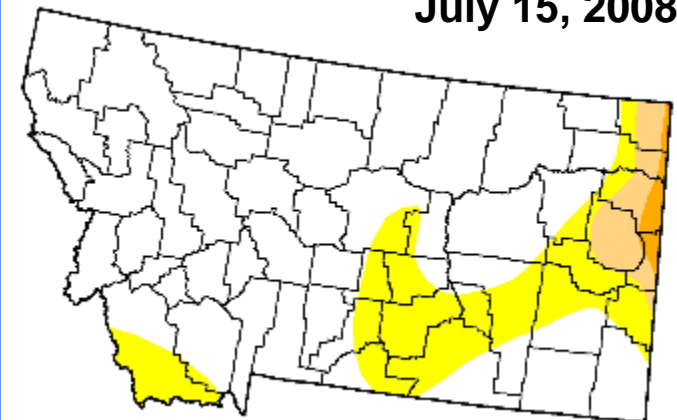
<http://drought.unl.edu>

- D0 (Abnormally Dry) covering most of Montana
- D2 (Severe) and D3 (Extreme) working into eastern counties

August 12, 2008

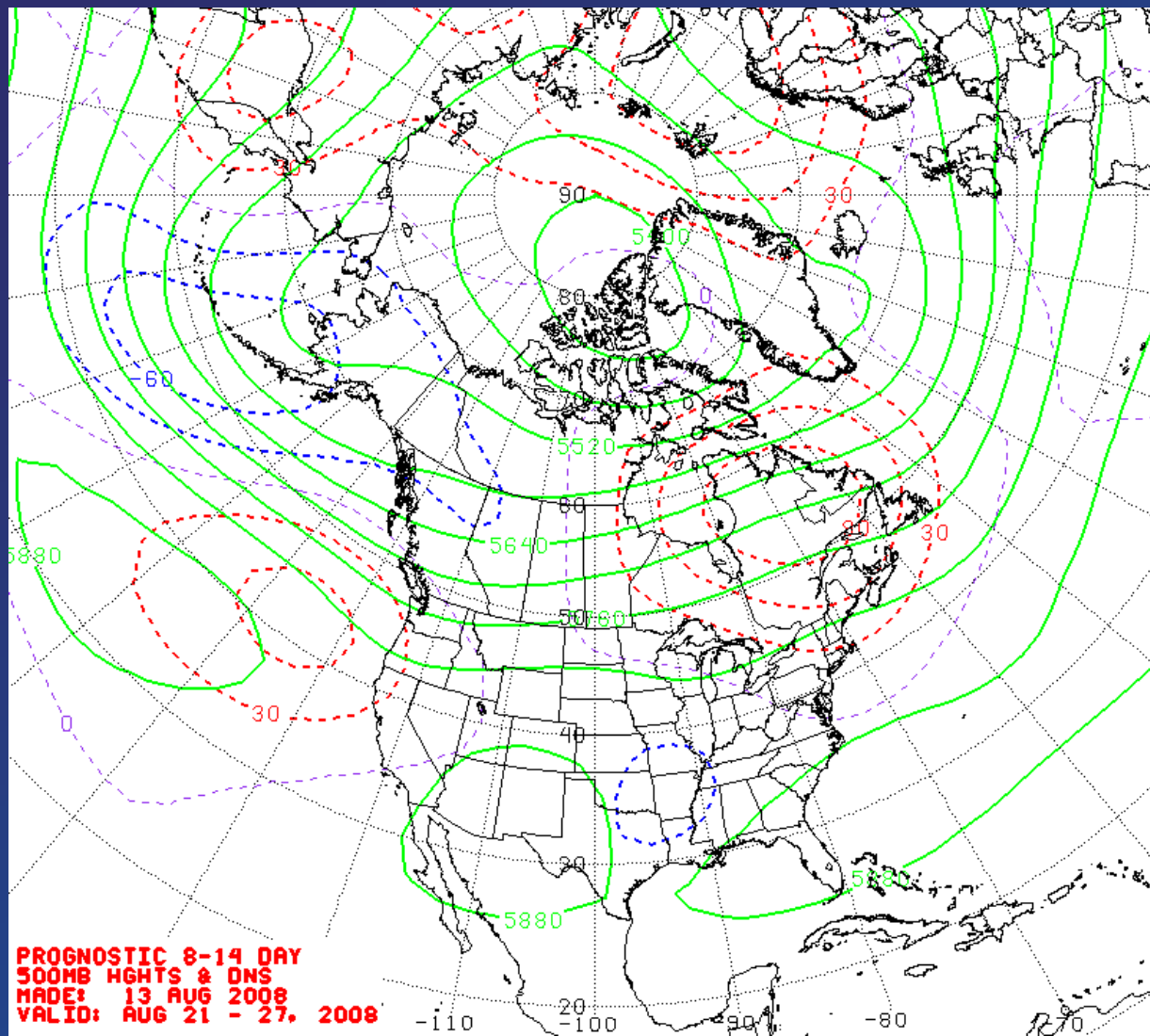


July 15, 2008



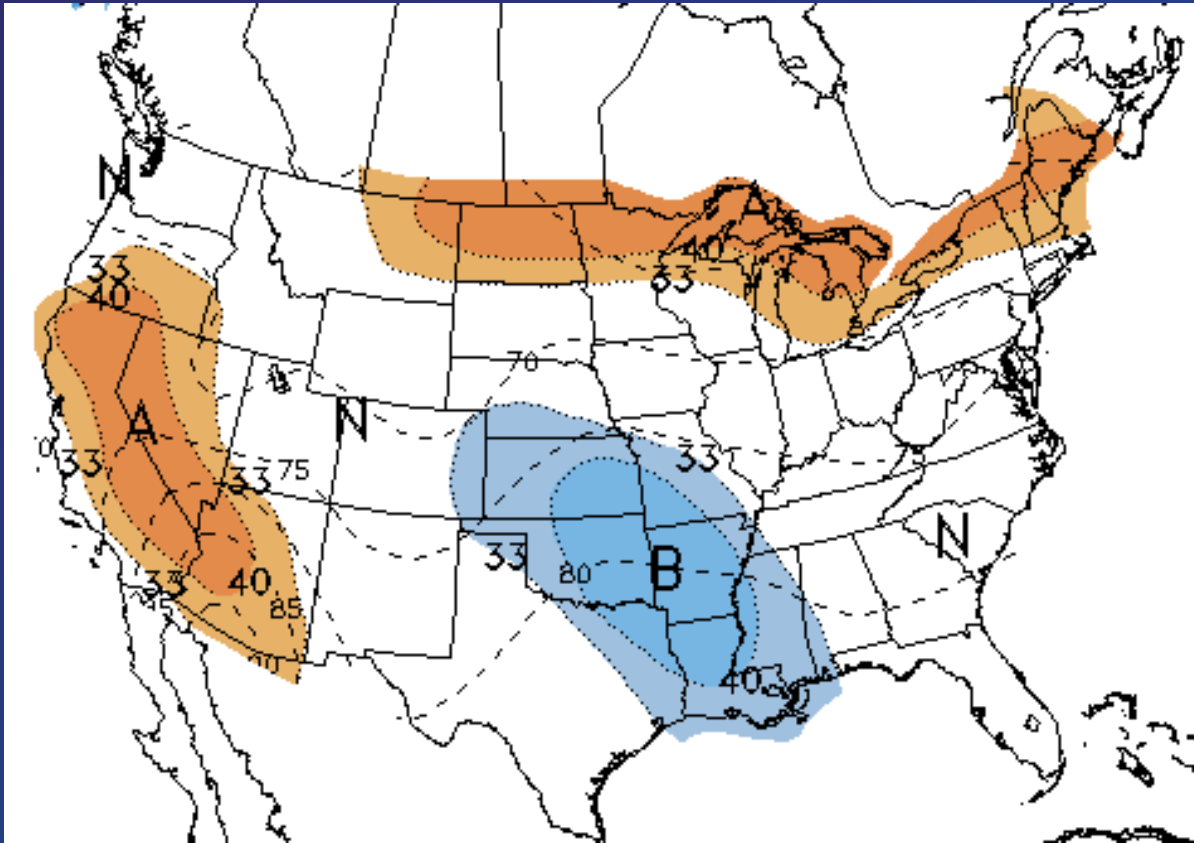
8 to 14 Day Outlook

500mb Heights and Anomalies



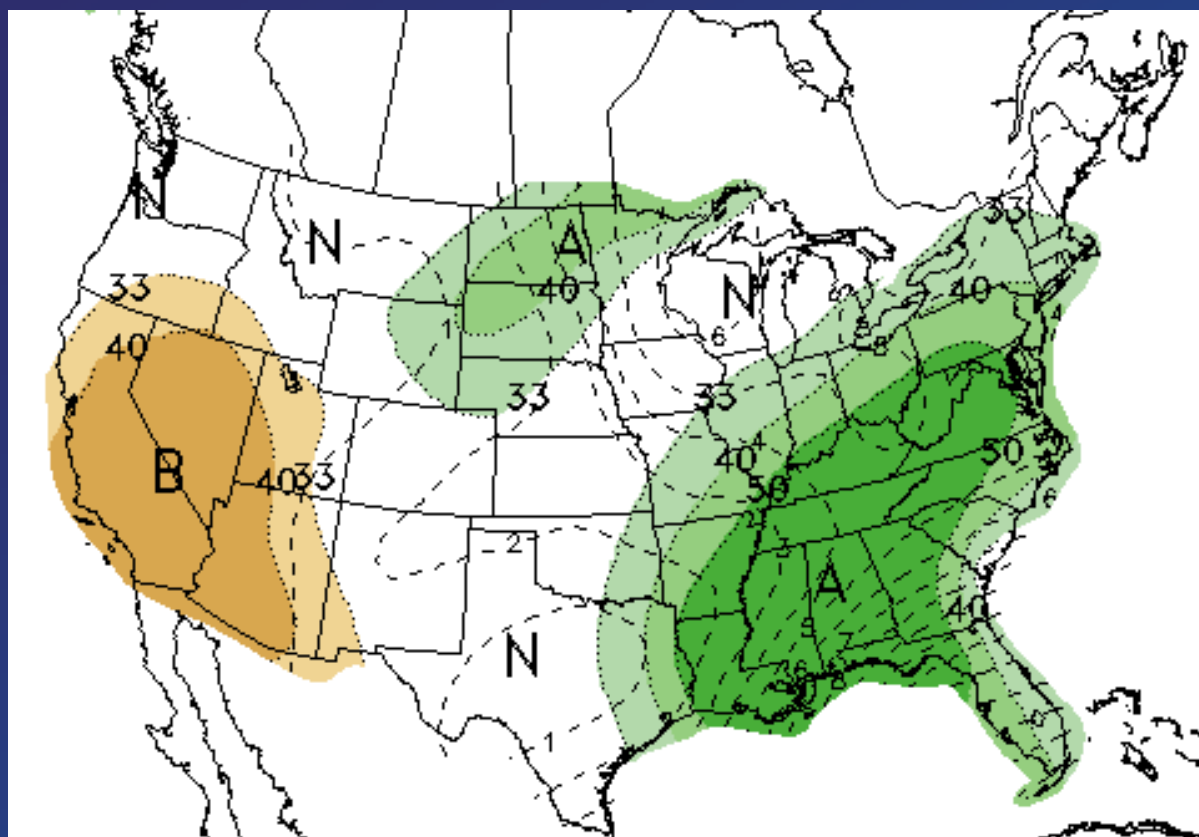
- August 21 - 27
- Weak low pressure trough over Pacific Northwest... weak high pressure over central and southern U.S.

8 to 14 Day Outlook – Temperatures



- ♦ August 21 - 27
- ♦ Northeast and eastern Montana have better chance for above normal temperatures
 - 33% to 50%
- ♦ Equal chances of above... below or near normal temperatures elsewhere
- ♦ Averages
 - *Highs in the mid 70s to mid 80s*
 - *Lows in the mid 40s to lower 50s*

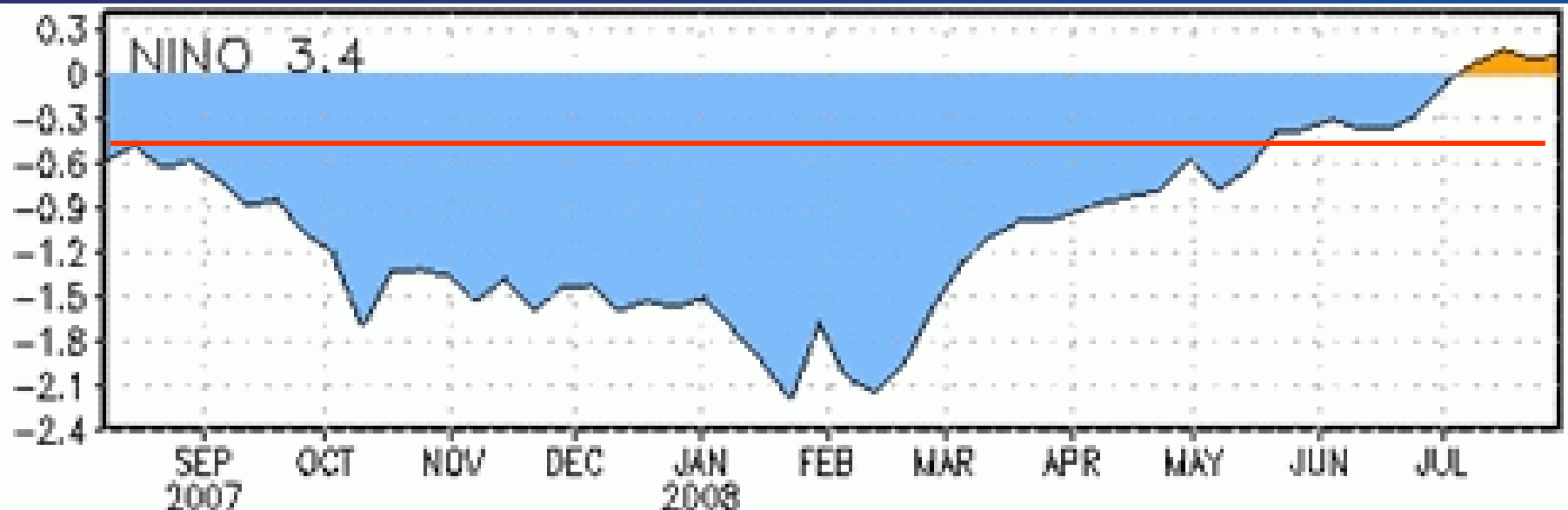
8 to 14 Day Outlook – Precipitation



- **August 21 - 27**
- **Better chances for above normal precipitation over southeast Montana**
 - *33% to 40% chance*
- **Equal chances of above... below or near normal precipitation elsewhere**
- **Normals**
 - *~1.00 – 1.50 inches*

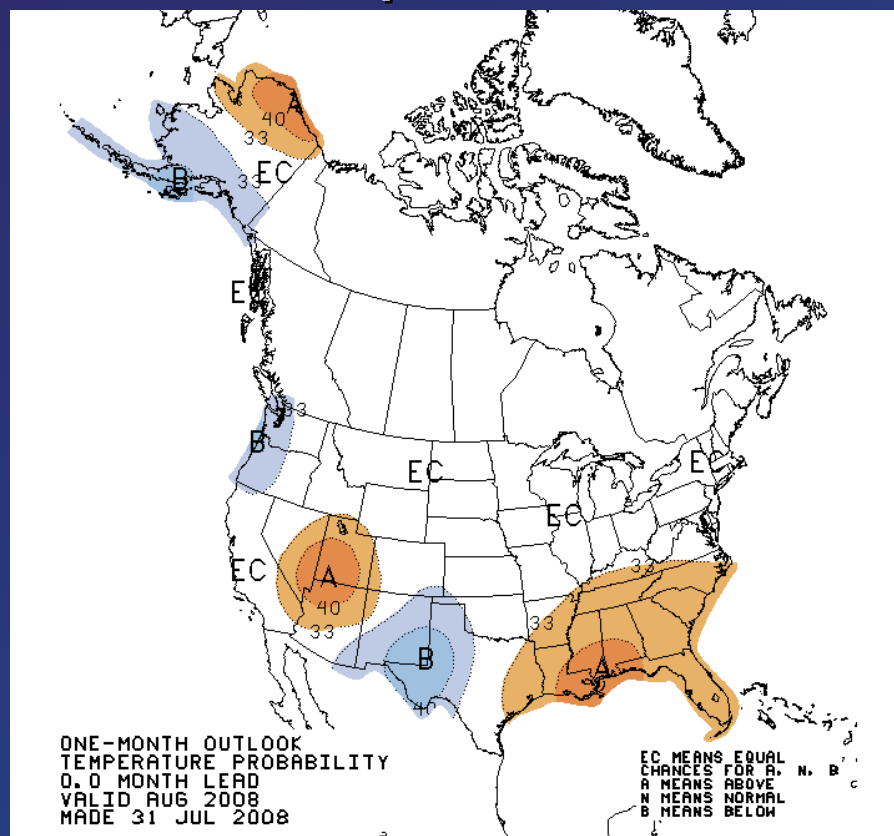
El Niño / La Niña

- 💧 ENSO-neutral conditions are expected to continue into Fall 2008



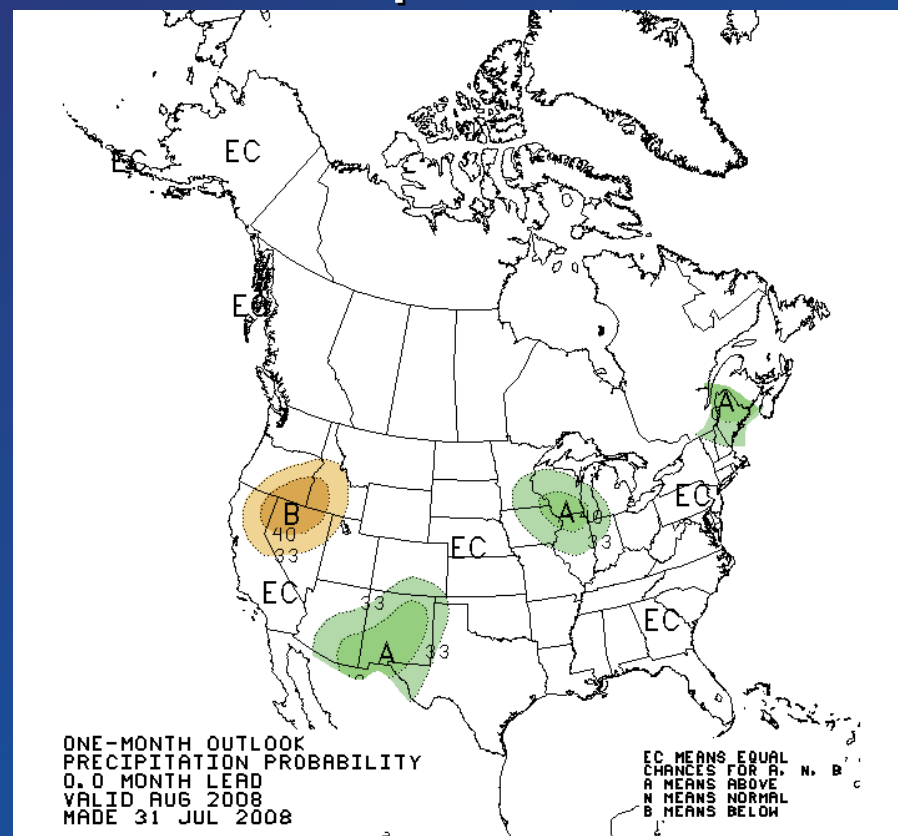
August Outlook

Temperature



- Equal chances temperatures will be above...below or near normal across all of Montana

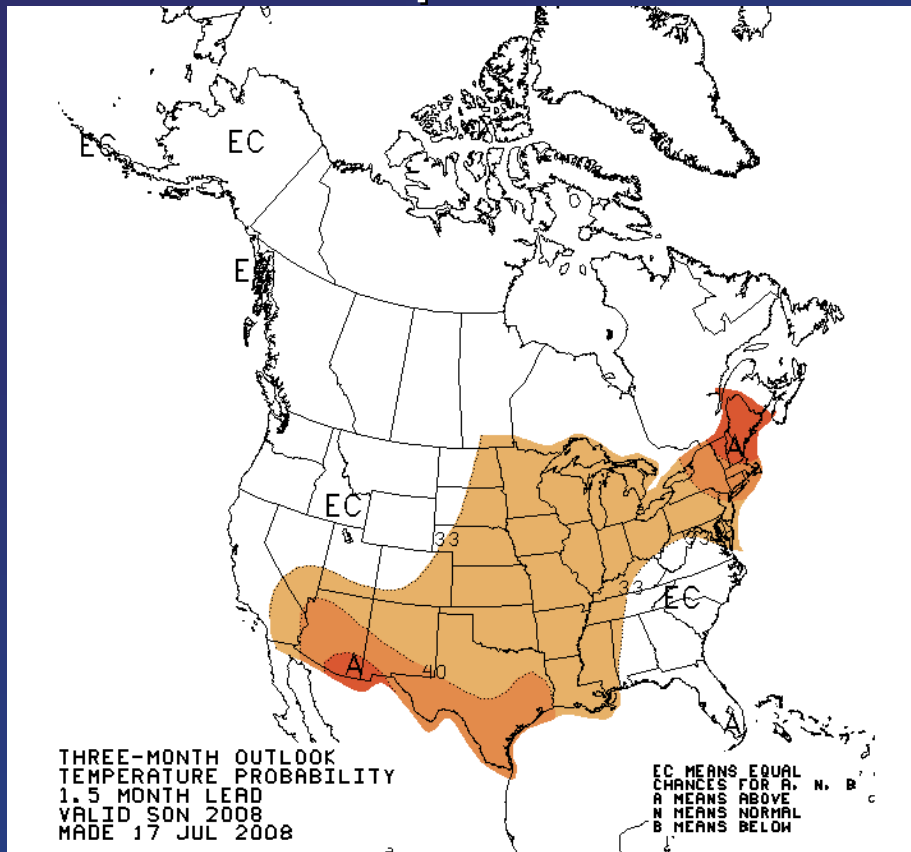
Precipitation



- Equal chances precipitation will be above...below or near normal across all of Montana

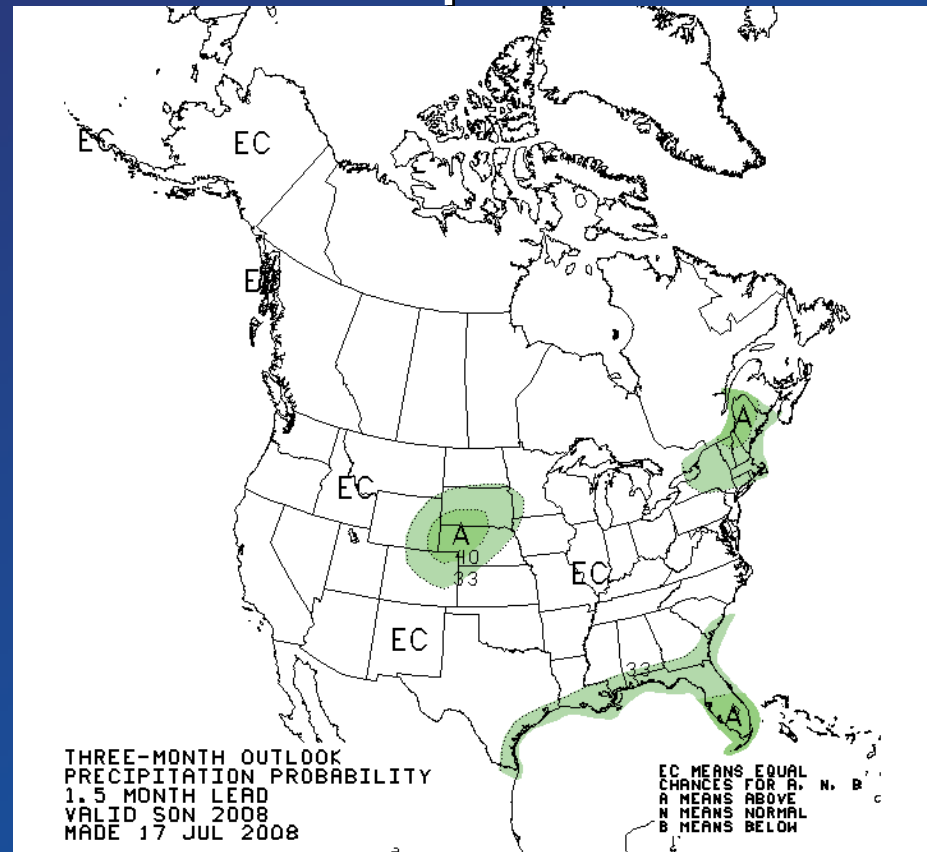
September - November Outlook

Temperature



- 💧 No forecast skill... equal chances temperatures will be above... below or near normal

Precipitation

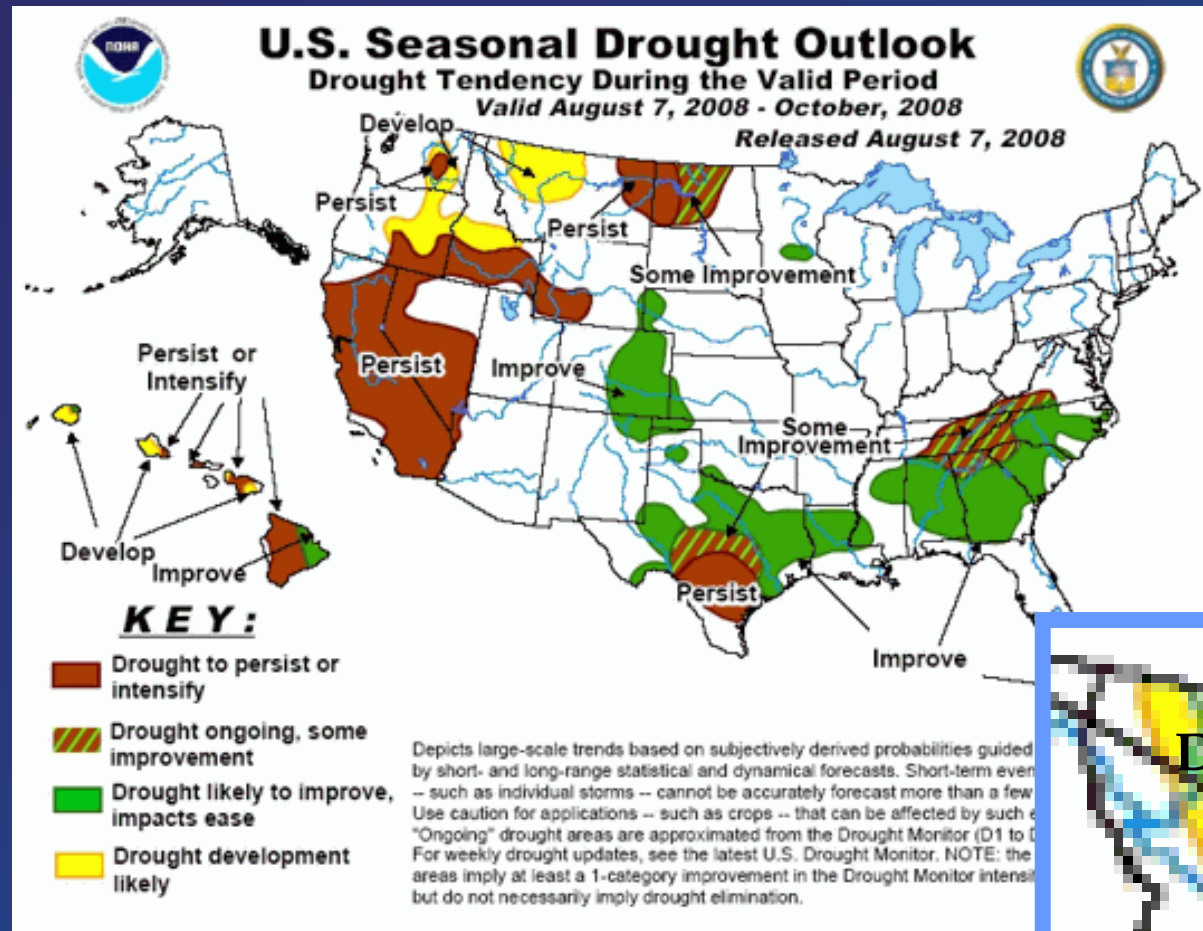


- 💧 No forecast skill... equal chances precipitation will be above... below or near normal

Drought Outlook

Issued August 7, 2008

- 💧 Drought expected to persist northeast/east
- 💧 Drought development expected northwest/north central



In Summary...

- 💧 **July brought below normal precipitation to Montana**
 - 💧 *Exception – Small areas northeast, southeast and along the northern Rocky Mountain Front*
- 💧 **August has been below normal for western third of Montana**
 - 💧 *Other areas have received spotty, convective precipitation... some areas well above normal*
- 💧 **Crop year well below normal northwest, southwest and east**
- 💧 **Water year mostly near normal**
- 💧 **Drought Outlook indicates persistence expected east... development expected northwest**

drought.gov

NIDIS Public Community - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.drought.gov/portal/server.pt nidis portal

MODIS 30days FFMP Basins AHPS CMS WHFS Water Reservoir Stora... TFX Graphs Login for National We... Department of Comme... AWDC

Other Drought-related Sites Drought Monitor NIDIS Public Community

National Integrated Drought Information System drought.gov

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Navigate drought.gov

- What is NIDIS?
- Current Drought
- Forecasting
- Impacts
- Planning
- Education
- Research

Area Information

Select State... >> Go

Select Region... >> Go

Maps & Tools

>> GIS Resources

Welcome to drought.gov!

Icon - Impacts
How is the Drought Affecting Me?

Will the Drought Continue?

Where are Drought Conditions Now?

U.S. Drought Monitor

April 8, 2008
2008 Apr 8 12Z

Released Thursday, April 10, 2008
Author: Rick Thaler, Climate Prediction Center, NOAA
http://drought.unl.edu/dm

Drought Conditions

% Area for U.S., including, AK, HI & PR
(As of 4.8.2008)

Info Source: National Drought Mitigation Center

Drought Condition	% Area
D0 Abnormally Dry	2.19%
D1 Drought - Moderate	4.49%
D2 Drought - Severe	15.57%
D3 Drought - Extreme	21.85%
D4 Drought - Exceptional	55.9%

View Time Series - Last 12 months

What's New

- ** drought.gov - New Release! **
- Southeast Drought Workshop
- Status of Drought Early Warning Workshop - June 2008

Drought News

- Southeast drought eases, but concern remains - USATODAY.com
- Do Trees Worsen Droughts? : NPR
- NOAA - National Oceanic and Atmospheric Administration - Current Major Flooding in U.S. a Sign of Things to Come
- Los Angeles Times: More changes that help conserve water at home
- U.S. Spring Season Forecast: More Record Floods Environment News Service (ENS)

NIDIS Feature

Southeast Drought Workshop

April 29-30, 2008

weather.gov

weather.gov/billings

weather.gov/glasgow

weather.gov/missoula

weather.gov/greatfalls



Missouri River near Cascade